applying the at least one circumferentially-inextensible annular structure to a region close to inner circumferential edges of the at least one first carcass ply of the carcass structure;

wherein the step of forming the at least one first carcass ply of the carcass structure comprises the steps of:

preparing first strip lengths, each first strip length comprising longitudinal and parallel thread elements at least partly coated with at least one layer of raw elastomer material; and

depositing the first strip lengths onto a toroidal support in a substantially U-shaped conformation about a profile in transverse section of the toroidal support to define two side portions, the side portions substantially extending in planes orthogonal to a geometric axis of rotation of the toroidal support at mutually-spaced-apart positions in an axial direction, and a crown portion extending at a radially-outer position between the side portions;

wherein the crown portions of each first strip length are disposed consecutively in side-by-side relationship along a circumferential extension of the toroidal support, and wherein the side portions of at least some first strip lengths are covered in part with a side portion of at least one circumferentially-consecutive first strip length; and

wherein the step of forming the at least one circumferentially-inextensible annular structure comprises depositing at least one first elongated element in substantially concentric coils to form a first circumferentially-inextensible annular insert substantially in a form of an annulus.

28. (new) The method of claim 27, wherein the first strip lengths are prepared by cutting actions executed sequentially on at least one continuous strip element incorporating the thread elements in the at least one layer of raw elastomer material.

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29. (new) The method of claim 28, wherein each cutting action is followed by deposition of an individual first strip length thus obtained onto the toroidal support.

30. (new) The method of claim 27, wherein the side portions of circumferentially-consecutive first strip lengths on the toroidal support converge toward the geometric axis of rotation of the toroidal support.

31. (new) The method of claim 27, wherein the covered side portions of the first strip lengths progressively decrease starting from a maximum value at radially-inner ends of the side portions until a zero value at transition regions between the side portions and the crown portion.

32. (new) The method of claim 27, wherein the first strip lengths are sequentially deposited onto the toroidal support according to a circumferential distribution pitch corresponding to a width of the first strip lengths.

33. (new) The method of claim 27, wherein the first strip lengths are sequentially deposited onto the toroidal support according to a circumferential distribution pitch corresponding to a multiple of a width of the first strip lengths.

34. (new) The method of claim 27, wherein the first strip lengths have a width corresponding to a submultiple of a circumferential extension of the toroidal support, as measured at an equatorial plane of the toroidal support.

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35. (new) The method of claim 27, further comprising the step of sequentially pressing the side portions of each first strip length to define regions of increased width close to inner circumferential edges of the carcass structure.

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36. (new) The method of claim 35, wherein the first strip lengths are prepared by cutting actions executed sequentially on at least one continuous strip element incorporating the thread elements in the at least one layer of raw elastomer material, the pressing step being carried out on the at least one continuous strip element before execution of corresponding cutting actions.

37. (new) The method of claim 35, further comprising the step of moving the thread elements in the first strip lengths apart from each other concurrently with the pressing step.

Sub C1

38. (new) The method of claim 27, wherein during the depositing step, at least one of the first strip lengths is held on the toroidal support by a suction action produced through the toroidal support.

39. (new) The method of claim 27, wherein the step of depositing each first strip length comprises the steps of:

laying down the first strip length transversely and at a centered position relative to an equatorial plane of the toroidal support;

radially moving the first strip length close to the toroidal support so as to form the crown portion of the first strip length on the toroidal support;

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translating opposite ends of the first strip length substantially radially close to the geometric axis of rotation of the toroidal support for applying the side portions of the first strip length to the toroidal support; and

rotating the toroidal support through an angular pitch corresponding to a circumferential distribution pitch of the first strip lengths.

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40. (new) The method of claim 27, further comprising the step of pressing the side portions of the first strip lengths against side walls of the toroidal support.

41. (new) The method of claim 27, further comprising the step of forming at least one second carcass ply superposed on the at least one first carcass ply.

42. (new) The method of claim 41, wherein the step of forming the at least one second carcass ply comprises the steps of:

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preparing second strip lengths, each length comprising longitudinal and parallel thread elements at least partly coated with at least one layer of raw elastomer material; and

depositing the second strip lengths onto the toroidal support in a substantially U-shaped conformation about the profile in transverse section of the toroidal support to define two side portions, substantially extending in planes orthogonal to the geometric axis of rotation of the toroidal support at mutually-spaced-apart positions in the axial direction, and a crown portion extending at a radially-outer position between the side portions;

wherein the crown portions of each second strip length are disposed consecutively in side-by-side relationship along the circumferential extension of the toroidal support, and wherein

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the side portions of at least some second strip lengths are covered in part with a side portion of at least one circumferentially-consecutive second strip length.

43. (new) The method of claim 27, further comprising the step of coating the toroidal support with at least one sealing layer or liner made of an elastomer material impervious to air prior to forming the at least one first carcass ply of the carcass structure.

44. (new) The method of claim 43, wherein the coating step is carried out by winding at least one ribbon band of an air-proof elastomer material in coils disposed side-by-side along the profile in transverse section of the toroidal support.

45. (new) The method of claim 27, further comprising the steps of:

disengaging the tire from the toroidal support;

introducing an air tube into the carcass structure; and

vulcanizing the tire.

46. (new) The method of claim 27, further comprising the steps of:

vulcanizing the tire; and

stretching the carcass structure during the vulcanizing step to achieve an expansion of the tire of a linear amount between 2% and 5%.

47. (new) The method of claim 27, further comprising the steps of:

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depositing at least one second elongated element in substantially concentric coils to form a second circumferentially-inextensible annular insert substantially in a form of an annulus disposed concentrically in a side-by-side relationship relative to the first annular insert; and

forming at least one filling body of raw elastomer material interposed between the at least one first elongated element and the at least one second elongated element.

48. (new) The method of claim 47, wherein the at least one first elongated element and the at least one second elongated element are deposited into a molding cavity, and wherein the at least one filling body is formed in the molding cavity.

49. (new) The method of claim 47, wherein at least one substantially concentric coil is defined by a continuous spiral of one or more elongated elements.

50. (new) The method of claim 47, wherein at least one substantially concentric coil is defined by concentric rings of one or more elongated elements.

51. (new) The method of claim 48, wherein the at least one filling body is formed in the molding cavity by interposing at least one annular element of raw elastomer material of predetermined volume between the first and second annular inserts, and reducing a volume of the molding cavity to compress and deform the at least one annular element until the at least one annular element fills the molding cavity.

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